

ORIGINAL ARTICLE

Knowledge, Attitudes and Practices to Sunscreen Use among Dermatology Patients at University Hospital Amman, Jordan: A Cross-Sectional Study

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Abstract

Background and Aims: Skin cancer is a significant public health concern globally. Jordan's location and high exposure to UV radiation have led to an increase in the incidence rate of skin cancer. This study aimed to investigate patients' knowledge, attitudes, and practices regarding sunscreen use in one of the major hospitals in Jordan, and identify demographic factors associated with regular sunscreen use.

Methodology: An observational cross-sectional study was conducted at the dermatology clinic of Jordan University Hospital, Amman, Jordan, from February 2, 2023 to March 6, 2023. The study included 397 participants recruited from the clinic's waiting area. A validated survey questionnaire was used to collect data on demographics, previous skin cancer history, sunscreen allergies, knowledge, attitudes, and practices related to sunscreen use. The data were analyzed using SPSS v. 26. Statistical significance was established at a p -value of <0.05 .

Results: The majority of participants were female (67.0%) and aged 18–25 years (53.7%). Only 24.9% of participants reported using sunscreen regularly, while 34.0% reported never using it. Sunscreen use was more prevalent among participants with higher education and income levels. The main sources of sunscreen recommendations were family and friends (48.1%), followed by dermatologists (32.7%). The most common reason for not using sunscreen was forgetfulness (40.1%).

Conclusion: The study revealed that knowledge and practices related to sunscreen use among Jordanian dermatology patients are insufficient, and that there is a need for increased patient education regarding the importance of sunscreen use.

Keywords: Sunscreen, knowledge, attitudes

INTRODUCTION

Skin cancer has become a significant public health concern worldwide due to its increasing prevalence and multiple risk factors. According to the World Health

Organization (WHO), approximately 132,000 cases of melanoma and three million cases of non-melanoma skin cancer are diagnosed globally every year [1]. Some of the established risk factors for skin cancer

may include exposure to UV radiation, a history of sunburns, fair skin, a family history of the disease, and a weakened immune system [2].

Jordan's geographical location and high exposure to UV radiation have led to an increase in the incidence rate of skin cancer in recent years, making the population highly susceptible to the disease [3]. According to the Jordan Meteorological Agency, the city's UV index is generally high, especially in the months of June and July [4]. In 2020, Abualsaud et al. [5] revealed that in Jordan, patients' knowledge of skin cancer risk factors and adherence to preventive treatments were low. Despite Jordan having a high skin cancer risk, little research has been conducted to evaluate patients' knowledge and attitudes to sun safety and sunscreen use.

Current research emphasizes the value of wearing sunscreen in preventing skin cancer, particularly melanoma [6]. Sunscreens function by either absorbing, reflecting or scattering UV rays [7]. For adequate protection, an SPF level of 30 or higher is recommended [8]. According to a randomized trial conducted by Green et al. [9] in Australia, regular sunscreen application led to a reduced incidence of melanoma. However, research showed that only 30% of individuals routinely engage in photoprotective practices, indicating the need to expand patient education and counseling regarding sunscreen use [10]. The use of broad-spectrum sunscreen is the sole strategy for melanoma prevention supported by factual evidence [11].

Age, gender, education, income and attitudes toward sun protection are just a few of the variables that have been identified in recent literature as having an impact on sunscreen use [12–15]. Identifying these variables within the Jordanian population could aid in developing targeted interventions and educational programs to encourage sunscreen use and prevent skin cancer. Accordingly, the aim of this study

was to investigate the knowledge, attitudes, and practices of patients to sunscreen use, and to identify demographic factors associated with regular sunscreen use.

METHODOLOGY

Study design and sample size

This observational cross-sectional study was conducted at the dermatology clinic of the University of Jordan Hospital, the first and largest academic hospital in Jordan. As a tertiary healthcare center, the hospital serves a broad region and is located in Amman. The study was carried out between February and March 2023.

Patients who fulfilled the following inclusion criteria were included in the study; no documented sunscreen allergy, were 18 years old or older, agreed to participate during a previous visit.

The estimated sample size was calculated at a margin of error of 5%, confidence level of 95%, and an effect size of 50%, with a sample of 383 participants needed.

Data collection instrument

The survey questionnaire was adapted from two previously validated studies Vasicek et al. [16] and Almaghamisi et al. [17]. The survey's knowledge questions were based on recommendations from the American Academy of Dermatology (AAD) [18].

Six demographic questions related to gender, age, education level, household income, social status, and the Fitzpatrick scale (used to determine skin phototype) were included in the survey. Additionally, the survey contained questions about prior personal or family history of skin cancer and sunscreen allergies. The knowledge section of the survey consisted of six questions, the attitude section consisted of three questions, and one question was included to assess the source of recommendations for sunscreen use.

To improve the accessibility and

comprehensibility of the research tool for the Jordanian community, the survey instruments used in the present study were reverse translated into Arabic by a dermatologist and professional translator.

Statistical analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS, version 26, Chicago, Ill). Associations between categorical variables were assessed using Chi-square. For all associations, the odds ratio (OR) and its associated confidence interval (CI) were reported. All statistical tests were conducted with a 95% confidence interval and a 5% error margin. A *p*-value of less than 0.05 was considered statistically significant.

Ethical considerations

This study was approved by the University of Jordan Institutional Review Board and followed the institutional and national research committee's ethical standards and the principles of the World Medical Association's Declaration of Helsinki. Informed consent was obtained from all participants prior to starting the questionnaire completion process.

RESULTS

Patient demographics

The survey was completed by a total of 397 participants, with 266 (67.0%) being female and the majority of 213 (53.7%) falling within the 18–25 age range. Most respondents were single, comprising 236 (59.4%) of the participants. Nearly half of the participants held a bachelor's degree (49.9%), and 289 (72.8%) reported a monthly income of less than 800 JDs. Fitzpatrick scale type three was the most commonly reported skin type for 128 (32.2%) participants. Of all respondents, 136 (34.3%) were visiting dermatology clinics for the first time. Only one participant was diagnosed with melanoma (0.3%), and seven others reported a family history of skin cancer, and 31 participants reported being allergic to sunscreen (7.8%) (as seen in Table 1). Among those who used sunscreen, 29.5% reported that their dermatologist had recommended it (Figure 1)

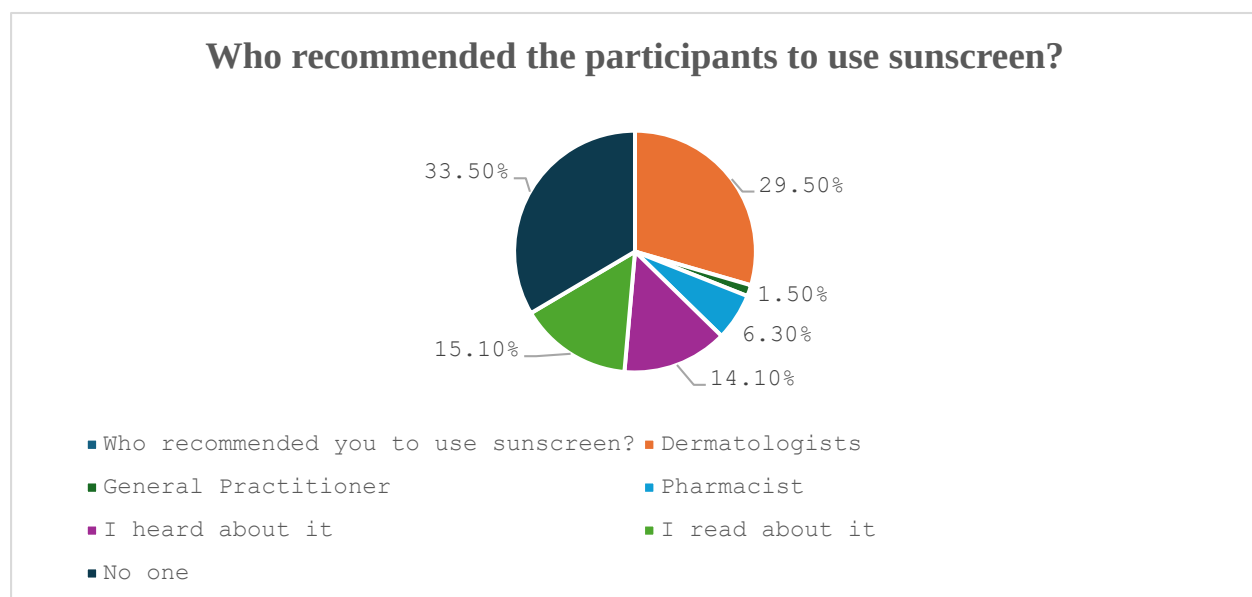


Figure 1. Percentage of Participants Advised by Different Sources to Use Sunscreen

Table 1. Patient demographics

Item		N (%)
Gender	Male	131 (33.0%)
	Female	266 (67.0%)
Age	18–25 Years	213 (53.7%)
	26–40 Years	93 (23.4%)
	41–60 Years	69 (17.4%)
	61–80 Years	21 (5.3%)
	>80 Years	1 (0.3%)
Social Status	Single	236 (59.4%)
	Married	149 (37.5%)
	Divorced	5 (1.3%)
	Widow	7 (1.8%)
Educational Level	Primary School	36 (9.1%)
	Secondary School	80 (20.2%)
	Diploma	48 (12.1%)
	Bachelor's	198 (49.9%)
	Higher Degree	35 (8.8%)
Monthly Income	Less than 400 JDs	127 (32.0%)
	400–800 JDs	162 (40.8%)
	800–1200 JDs	72 (18.1%)
	1200–1500 JDs	11 (2.8%)
	1500–2000 JDs	7 (1.8%)
	2000–3000 JDs	5 (1.3%)
	More than 3000 JDs	13 (3.2%)
Skin Lesion Type	1	33 (8.3%)
	2	74 (18.6%)
	3	128 (32.2%)
	4	67 (16.9%)
	5	72 (18.2%)
	6	23 (5.8%)
First Visit to Dermatology Clinic	Yes	136 (34.3%)
	No	261 (65.7%)
History of Skin Cancer	No	393 (99.0%)
	Yes, Melanoma	1 (0.3%)
	Others	3 (0.7%)
Family History of Skin Cancer	Yes	31 (7.8%)
	No	366 (92.2%)
Allergy to Sunscreen or One of its Components	Yes	7 (1.8%)
	No	390 (98.2%)

Participants' knowledge of AAD's sunscreen recommendations

Among the 397 participants in the survey, 126 (31.7%) reported using sunscreen every day of the year, while 144 (36.3%) reported not using sunscreen at all. More than half of the respondents 211 (53.1%) were unaware of the minimum recommended SPF for sufficient protection, with only 29 (7.3%) answering correctly. Furthermore, 279 respondents (70.3%) did not know the amount of sunscreen required to cover their entire body before sun exposure, with only 25 (6.3%) answering accurately. Regarding the minimum time needed for sunscreen application before sun exposure, 179 participants (45.1%) believed that 15 minutes was necessary. Only 99 respondents (24.9%) were aware that sunscreen should be reapplied every two hours, while 149 were uncertain of the longest duration allowed between reapplications. The majority of respondents 309 (75.8%) agreed that the period between 10 am and 4 pm was the worst time for sun exposure (refer to Table 2).

Relation between participants' knowledge of AAD's sunscreen recommendations and demographic variables

In comparison to male respondents, female respondents demonstrated significantly greater accuracy in answering questions according to AAD recommendations regarding several factors, including frequency of use, minimum SPF, time before exposure to the sun, time before reapplication, and worst time of exposure (92.1% vs 7.9%, $p<0.001$, 82.8% vs 17.2%, $p<0.001$, 81.6% vs 18.4%, $p<0.001$, 82.8% vs 17.2%, $p<0.001$, and 72.1% vs 27.9%, $p<0.001$, respectively).

Bachelor's degree holders also demonstrated significant accuracy in answering questions according to the recommendation regarding frequency of use (61.1%, $p<0.001$), minimum SPF (72.4%, $p=0.003$), time before exposure to sun (57.5%, $p=0.006$), and time before

reapplication (67.7%, $p=0.017$).

Respondents classified as type three according to the Fitzpatrick scale were the most accurate group in answering questions according to the recommendation regarding frequency of use (33.3%, $p<0.001$), minimum SPF (34.5%, $p<0.001$), time before exposure to sun (30.2%, $p<0.001$), and time before reapplication (26.3%, $p=0.018$).

Moreover, respondents who were visiting the clinic for the first time demonstrated lower accuracy in answering questions regarding frequency of use (27.8%) and time before exposure to the sun (32.4%) compared to those who visited more often ($p=0.001$ and 0.022 , respectively) (Table 3)

Relation between attitude toward sunscreen use and variables

The likelihood of regularly using free sunscreen received from the hospital was less agreed upon by male respondents than by female respondents (OR=0.440, $p<0.001$, 95% CI: 0.277–0.701). Moreover, individuals in the 18–25 age group were twice as unlikely to be informed about sunscreen usage by their dermatologists compared to other age groups (OR=2.105, $p=0.001$, 95% CI: 1.341–3.304). Conversely, participants with a monthly income of less than 800 JDs and those visiting the clinic for the first time were less likely to be uninformed about sunscreen usage by their dermatologists (OR=0.573, $p=0.019$, 95% CI: 0.358–0.916) and (OR=0.611, $p=0.042$, 95% CI: 0.379–0.985), respectively. Furthermore, individuals with a monthly income of less than 800 JDs were more likely to consider the price of sunscreen when making their selection (OR=1.618, $p=0.045$, 95% CI: 1.008–2.596) but less likely to be deterred by its price (OR=2.153, $p=0.005$, 95% CI: 1.255–3.692). Finally, first-time visitors to dermatology clinics were less likely to be deterred by the price of sunscreen (OR=0.571, $p=0.033$, 95% CI: 0.340–0.958) (Table 4).

Table 2. Participants' knowledge of AAD's sunscreen recommendations

	Statement	N (%)
When should you wear sunscreen?	Daily throughout the year ^a	126 (31.7%)
	Daly in summer	50 (12.6%)
	When exposed to sun rays for a long period	77 (19.4%)
	Don't use sunscreen	144 (36.3%)
What is the minimum recommended SPF?	Zero SPF	39 (9.8%)
	15 SPF	44 (11.1%)
	30 SPF ^a	29 (7.3%)
	45 SPF	4 (1.1%)
	60 SPF	70 (17.6%)
	Don't know	211 (53.1%)
How much sunscreen is needed to cover the whole body before sun exposure?	7.5 ml	40 (10.1%)
	15 ml	46 (11.6%)
	30 ml ^a	25 (6.3%)
	60 ml	7 (1.7%)
	Don't know	279 (70.3%)
What is the minimum time allowed for sunscreen application before sun exposure?	Zero minutes	19 (4.7%)
	15 minutes ^a	179 (45.1%)
	30 minutes	46 (11.6%)
	45 minutes	1 (0.3%)
	60 minutes	5 (1.3%)
	Don't know	147 (37.0%)
What is the longest period allowed between sunscreen reapplications?	1 Hour	12 (3.0%)
	2 Hours ^a	99 (24.9%)
	3 Hours	47 (11.8%)
	4 Hours	37 (9.3%)
	6 Hours	23 (5.8%)
	No need to reuse it again	30 (7.7%)
	Don't know	149 (37.5%)
What is the worst time to be exposed to the sun?	8 am–10 am	21 (5.3%)
	10 am–4 pm ^a	301 (75.8%)
	Before sunset	11 (2.8%)
	Don't know	64 (16.1%)

^a The AAD recommendation for the question

Table 3. Relation between participants' knowledge of AAD's sunscreen recommendations and demographic variables

Variables	Frequency of Use	Minimum SPF	Amount Needed	Time Before Exposure to Sun	Time Before Reapplication	Worst Time of Exposure
Gender						
p-value	<0.001	<0.001	0.540	<0.001	<0.001	0.001
Male	10 (7.9%)	5 (17.2%)	6 (24.0%)	33 (18.4%)	17 (17.2%)	84 (27.9%)
Female	116 (92.1%)	24 (82.8%)	19 (76.0%)	146 (81.6%)	82 (82.8%)	217 (72.1%)
Educational Level						
p-value	<0.001	0.003	0.673	0.006	0.017	0.462
Primary School	4 (3.2%)	2 (6.9%)	1 (4.0%)	8 (4.5%)	3 (3.0%)	23 (7.6%)
Secondary School	19 (15.1%)	1 (3.4%)	4 (16.0%)	34 (19.0%)	14 (14.1%)	63 (20.9%)
Diploma	14 (11.1%)	3 (10.3%)	5 (20.0%)	24 (13.4%)	8 (8.1%)	37 (12.3%)
Bachelor's	77 (61.1%)	21 (72.4%)	13 (52.0%)	103 (57.5%)	67 (67.7%)	150 (49.8%)
Higher Degree	12 (9.5%)	2 (6.9%)	2 (8.0%)	10 (5.6%)	7 (7.1%)	28 (9.3%)
Skin Lesion Type						
p-value	<0.001	0.001	0.469	0.001	0.018	0.132
1	15 (11.9%)	4 (13.8%)	3 (12.0%)	11 (6.1%)	6 (5.1%)	24 (8.0%)
2	25 (19.8%)	5 (17.2%)	5 (20.0%)	43 (24.0%)	21 (21.2%)	60 (19.9%)
3	42 (33.3%)	10 (34.5%)	7 (28.0%)	54 (30.2%)	26 (26.3%)	98 (32.6%)
4	26 (20.6%)	2 (6.9%)	6 (24.0%)	39 (21.8%)	25 (25.3%)	51 (16.9%)
5	14 (11.1%)	6 (20.7%)	3 (12.0%)	29 (16.2%)	18 (18.2%)	53 (17.6%)
6	4 (3.2%)	2 (6.9%)	1 (4.0%)	3 (1.7%)	3 (3.0%)	15 (5.0%)
First Visit to Dermatology Clinics						
p-value	0.001	0.225	0.093	0.022	0.372	0.234
Yes	35 (27.8%)	7 (24.1%)	13 (52.0%)	58 (32.4%)	26 (26.3%)	102 (33.9%)
No	91 (72.2%)	22 (75.9%)	12 (48.0%)	121 (67.6%)	73 (73.7%)	199 (66.1%)

Table 4. Relationship between attitude toward sunscreen use and demographic variables

Variable		Item		OR	95% Confidence Interval for OR		p-value
		Yes	No		Lower Bound	Upper Bound	
Will receiving free sunscreen from the hospital increase the possibility of you using sunscreen regularly?							
Gender	Male	83 (63.4%)	48 (36.6%)	0.440	0.277	0.701	<0.001
	Female	212 (79.7%)	54 (20.3%)				
Age	18–25 Years	166 (77.9%)	47 (22.1%)	1.506	0.958	2.367	0.075
	>25	129 (70.1%)	55 (29.9%)				
Educational Level	Primary, Secondary, and Diploma	124 (75.6%)	40 (24.4%)	1.124	0.710	1.780	0.618
	Bachelor’s, and Higher Degrees	171 (73.4%)	62 (26.6%)				
Monthly Income	<800 JDs	220 (76.1%)	69 (23.9%)	1.403	0.859	2.292	0.175
	>800 JDs	75 (69.4%)	33 (30.6%)				
First Visit to Dermatology Clinics	Yes	95 (69.9%)	41 (30.1%)	0.707	0.444	1.125	0.143
	No	200 (76.6%)	61 (23.4%)				
Did your dermatologist tell you about the usage of sunscreen?							
Gender	Male	37 (28.2%)	94 (71.8%)	0.932	0.587	1.400	0.764
	Female	79 (29.7%)	187 (70.3%)				
Age	18–25 Years	77 (36.2%)	136 (63.8%)	2.105	1.341	3.304	0.001
	>25	39 (21.2%)	145 (78.8%)				
Educational Level	Primary, Secondary, and Diploma	46 (28.0%)	118 (72.0%)	0.908	0.584	1.411	0.667
	Bachelor’s, and Higher Degrees	70 (30.0%)	163 (70.0%)				
Monthly Income	<800 JDs	75 (26.0%)	214 (74.0%)	0.573	0.358	0.916	0.019
	>800 JDs	41 (38.0%)	67 (62.0%)				
First Visit to Dermatology Clinics	Yes	31 (22.8%)	105 (77.2%)	0.611	0.379	0.985	0.042
	No	85 (32.6%)	176 (67.4%)				

Does the price of sunscreen impact your sunscreen choice?							
Gender	Male	49 (55.1%)	40 (44.9%)	0.767	0.470	1.250	0.286
	Female	155 (61.5%)	97 (38.5%)				
Age	18–25 Years	122 (62.9%)	72 (37.1%)	1.343	0.868	2.079	0.185
	>25	82 (55.8%)	65 (44.2%)				
Educational Level	Primary, Secondary, and Diploma	83 (60.1%)	55 (39.9%)	1.023	0.658	1.590	0.921
	Bachelor's, and Higher Degrees	121 (59.6%)	82 (40.4%)				
Monthly Income	<800 JDs	153 (63.2%)	89 (36.8%)	1.618	1.008	2.596	0.045
	>800 JDs	51 (51.5%)	48 (48.5%)				
First Visit to Dermatology Clinics	Yes	61 (54.0%)	52 (46.05)	0.697	0.441	1.101	0.121
	No	143 (62.7%)	85 (37.3%)				
Does the price of sunscreen prevent you from buying it?							
Gender	Male	29 (34.9%)	54 (65.1%)	0.990	0.586	1.672	0.970
	Female	83 (35.2%)	153 (64.8%)				
Age	18–25 Years	54 (31.0%)	120 (69.0%)	0.675	0.425	1.071	0.095
	>25	58 (40.0%)	87 (60.0%)				
Educational Level	Primary, Secondary, and Diploma	49 (39.2%)	76 (60.8%)	0.219	1.341	0.839	2.141
	Bachelor's, and Higher Degrees	63 (32.5%)	131 (67.5%)				
Monthly Income	<800 JDs	89 (40.1%)	133 (59.9%)	2.153	1.255	3.692	0.005
	>800 JDs	23 (23.7%)	74 (76.3%)				
First Visit to Dermatology Clinics	Yes	27 (26.7%)	74 (73.3%)	0.571	0.340	0.958	0.033
	No	85 (39.0%)	133 (61.0%)				

DISCUSSION

In this study, we aimed to assess the knowledge, perception, preferences, and attitudes of dermatology patients to correct sunscreen use according to AAD recommendations, at University Hospital Jordan.

The findings revealed that about one third of the participants only were aware of the AAD recommendation for daily sunscreen use throughout the year. This is a concern because exposure to ultraviolet (UV) radiation can occur even on cloudy days and during winter months [1]. Furthermore, a little more than one third of participants reported not using sunscreen at all. This lack of knowledge and poor attitudes to sunscreen use are consistent with previous research conducted in Jordan, which reported that only 33% of participants used sunscreen regularly [19].

While three quarters of the participants correctly identified the period between 10 am and 4 pm as the worst time for sun exposure, more than half of them did not know the

minimum recommended SPF. Of those who provided an answer, 17.6% believed that an SPF of 60 was the minimum recommended value. This was higher than the SPF 30 recommended by the AAD and was in line with previous research conducted in the Saudi Arabia, which found that participants preferred higher SPF sunscreens, and also found that participants had a good understanding of the timing of sun exposure [20]. However, it is worth noting that using a sunscreen with a high SPF does not necessarily provide better protection, as the difference in UV protection between an SPF 30 and 60 sunscreen is only about 1% [18].

Additionally, many participants (70.3%) did not know the minimum recommended SPF needed to cover the whole body. This aligns with a U.S.-based study, which found that only 29% of participants applied sunscreen correctly, with most participants applying too little sunscreen or failing to reapply frequently enough [21].

A considerable proportion of participants (37.5%) were unaware of the recommended time interval for sunscreen reapplication. This lack of knowledge is consistent with a prior study in New Jersey, which found that 57% of participants did not know how often to reapply sunscreen, and only 13% correctly identified the need to reapply every two hours [22].

The study identified a significant correlation between gender and knowledge of AAD's recommendations for sunscreen usage. Females demonstrated a considerably higher level of understanding than males in certain categories, as shown in the results. This finding aligns with the aforementioned research conducted in Saudi Arabia, which observed that women possessed superior knowledge regarding proper sunscreen use in comparison to men [23]. This gender disparity in knowledge could potentially be attributed to males showing less interest in skincare or perceiving it as a feminine concern.

Individuals with higher levels of education were more knowledgeable than those with lower levels of education. This finding is consistent with previous research in Sweden which showed that education is a significant predictor of knowledge of sunscreen use [24].

Our results suggest that participants with Fitzpatrick skin type 3 had the highest level of knowledge of sunscreen use according to the AAD guidelines, followed by skin types 2, 4, 5, 1, and 6. There were significant differences in participants' knowledge of sunscreen use based on skin type for most variables (refer to results). These findings are consistent with another study in Saudi Arabia which found that participants with Fitzpatrick skin types 1, 2, and 3 had better knowledge of correct sunscreen use [25].

The study also found a significant difference between age groups, with 63.8% of patients aged 18–25 years reporting not being advised by their dermatologist

regarding sunscreen use compared to 78.8% of patients above 25 years of age. These findings are concerning as a very high percentage of patients are not being advised or educated about the use of sunscreen by their dermatologists.

Regarding monthly income, patients with a monthly income of less than 800 JDs reported not being informed about sunscreen usage more often than patients with a higher income. This could be because patients with lower income may not prioritize spending on preventive measures such as sunscreen, making them less likely to ask about it.

The data showed that the majority of respondents believed that receiving free sunscreen from the hospital would increase their possibility of using sunscreen regularly. This finding is consistent with similar research conducted in Saudi Arabia, which found that providing education and free sunscreen increased their usage significantly [22]. Monthly income also played a role in patients' responses, with a higher proportion of patients on lower incomes (76.1%) agreeing that receiving free sunscreen would increase the likelihood of regular use, compared to those on higher incomes (69.4%). Another study conducted in Saudi Arabia found that individuals on higher incomes were more likely to purchase and use sunscreen regularly [26]. This finding may suggest that providing free or discounted samples of sunscreen would increase its use among individuals on low incomes.

Regarding the influence of sunscreen price on patients' choice, individuals with a higher monthly income (>800 JDs) were less likely to be discouraged by the price of sunscreen than those with lower income (<800 JDs), which is consistent with similar research conducted in Saudi Arabia [26].

CONCLUSION AND LIMITATIONS

We conclude that the participants had a lack of knowledge and poor adherence to the AAD sunscreen recommendations. This

highlights the need for increasing public awareness through implementing education programs and campaigns. However, the study has limitations due to its cross-sectional design and the use of a convenience sample. Future studies with larger and more diverse samples are needed to explore further the factors influencing sunscreen use in the Jordanian population.

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DECLARATIONS

Ethical approval

Ethical approval was obtained from the Academic Research Council of the Faculty of Medicine at the University of Jordan, in

accord with the ethical principles of the Helsinki Declaration.

Consent for publication

Written consent was obtained from all respondents, as approved by the Academic Research Council of the Faculty of Medicine at the University of Jordan.

Availability of data and materials

Data utilized to generate the mentioned results and conclusions are available upon request.

Competing interests

The authors declare no competing interests.

Authors' contributions

Rand Murshidi and Rama Ammouri contributed equally to this manuscript (co-first authors). All other authors contributed to data collection and writing the first draft.

REFERENCES

1. World Health Organization. (2018). Skin cancers. <https://www.who.int/news-room/q-a-detail/skin-cancers> (Accessed on: May 20, 2025)
2. American Cancer Society. (2021). Risk factors for skin cancer. <https://www.cancer.org/cancer/skin-cancer/prevention-and-early-detection/risk-factors.html> (Accessed on: May 20, 2025)
3. AlGhazo MA, Alzoubi KH. Epidemiology of skin cancer in Jordan: A 2007–2016 national study. *Photodermatol Photoimmunol Photomed*. 2019; 35(5):363–370. <https://doi.org/10.1111/phpp.12495> (Accessed on: May 20, 2025)
4. Jordan Meteorological Department. UV index forecast. <http://www.jmd.gov.jo/en/uv-index-forecast> (Accessed on: May 20, 2025)
5. Abualsaud NA, et al. Knowledge and practice of skin cancer prevention and early detection among Jordanian adults: A cross-sectional study. *J Cancer Educ*. 2020; 35(6):1156–1163. <https://doi.org/10.1007/s13187-019-01540-3> (Accessed on: May 20, 2025)
6. Diffey BL. When should sunscreen be reapplied? *J Eur Acad Dermatol Venereol*. 2019; 33(1):22–26. <https://doi.org/10.1111/jdv.15322> (Accessed on: May 20, 2025)
7. Sayre RM, Dowdy JC, Shepherd JG. Extending ultraviolet protection times using UV-absorbing compounds. *J Am Acad Dermatol*. 2017; 76(5):953–955. <https://doi.org/10.1016/j.jaad.2016.11.042> (Accessed on: May 20, 2025)
8. American Academy of Dermatology Association. Sunscreen FAQs. <https://www.aad.org/public/everyday-care/sun-protection/sunscreen-patients/sunscreen-faqs> (Accessed on: May 20, 2025)
9. Green AC, Williams GM, Logan V, Strutton GM. Reduced melanoma after regular sunscreen use: Randomized trial follow-up. *J Clin Oncol*. 2011; 29(3):257–263. <https://doi.org/10.1200/JCO.2010.28.7078> (Accessed on: May 20, 2025)
10. Robinson JK, et al. Systematic review of sun protection in the United States. *J Am Acad Dermatol*. 2011; 65(5 Suppl 1):S1–S102. <https://doi.org/10.1016/j.jaad.2011.08.001>

- (Accessed on: May 20, 2025)
11. Narayanan DL, Saladi RN. Sunscreens: A review of current status and future prospects. *Indian J Dermatol Venereol Leprol.* 2010; 76(3):240–244. <https://doi.org/10.4103/0378-6323.62976> (Accessed on: May 20, 2025)
 12. Sánchez Rodríguez R, et al. Knowledge, attitude, and habits of university students toward sun exposure and protection. *J Cancer Educ.* 2020; 35(5):967–972. <https://doi.org/10.1007/s13187-018-1411-6> (Accessed on: May 20, 2025)
 13. Görig T, et al. Sun protection behaviour of skin cancer patients in Germany. *J Eur Acad Dermatol Venereol.* 2013; 27(12):e158–e163. <https://doi.org/10.1111/jdv.12122> (Accessed on: May 20, 2025)
 14. Schofield PE, et al. Trends in sun protection behaviour among Australian young adults. *Int J Behav Med.* 2014; 21(5):762–770. <https://doi.org/10.1007/s12529-013-9372-2> (Accessed on: May 20, 2025)
 15. Kim J, et al. Sunscreen use and its association with skin pigmentation among young Korean women. *Int J Environ Res Public Health.* 2020; 17(17):6334. <https://doi.org/10.3390/ijerph17176334> (Accessed on: May 20, 2025)
 16. Vasicek CJ, et al. Patient knowledge of sunscreen guidelines and frequency of physician counseling. *Int J Womens Dermatol.* 2020; 6(1):16–20. <https://doi.org/10.1016/j.ijwd.2019.09.002> (Accessed on: May 20, 2025)
 17. Almaghamisi AS, et al. Dermatology patients' knowledge of sunscreen guidelines at a university hospital in Saudi Arabia. *Int J Gen Med.* 2021; 14:1871–1877. <https://doi.org/10.2147/IJGM.S312238> (Accessed on: May 20, 2025)
 18. Al-Qarqaz F, et al. Awareness about proper use of sunscreen in people of color: A Jordanian-based survey. *J Cosmet Dermatol.* 2020; 19(5):1131–1136. <https://doi.org/10.1111/jocd.13120> (Accessed on: May 20, 2025)
 19. Al-Ghobain MO, et al. Knowledge and attitudes towards sun exposure and protection in Taif, Saudi Arabia. *J Family Community Med.* 2015; 22(2):77–82. <https://doi.org/10.4103/2230-8229.155374> (Accessed on: May 20, 2025)
 20. Buller DB, et al. Compliance with sunscreen advice among winter sports participants. *J Am Acad Dermatol.* 2011; 65(3):S63–S69. <https://doi.org/10.1016/j.jaad.2011.02.039> (Accessed on: May 20, 2025)
 21. Buller, D. B., Andersen, P. A., Walkosz, B. J., Scott, M. D., Cutter, G. R., & Dignan, M. B. (2011). Compliance with sunscreen advice in a survey of adults engaged in outdoor winter recreation at high-elevation ski areas. *Journal of the American Academy of Dermatology*, 65(3), S63–S69.
 22. Lim, H. W., Gilchrest, B. A., Cooper, K. D., Bischoff-Ferrari, H. A., Rigel, D. S., Cyr, W. H., ... & Sondak, V. K. (2015). Sunburn and sun protection behaviors among US long-term melanoma survivors. *Journal of the American Academy of Dermatology*, 72(1), 43–51.
 23. Al Ghamdi K.M., Al Aklabi A.S., Al Qahtani A.Z. Knowledge, attitudes and practices of the general public toward sun exposure and protection: A national survey in Saudi Arabia. *Saudi Pharm J.* 2016; 24(6): 652–657.
 24. Falk M, Anderson CD. Influence of age, gender, educational level and self-estimation of skin type on sun exposure habits and readiness to increase sun protection. *Cancer Epidemiol.* 2013 Apr; 37(2): 127–32. doi: 10.1016/j.canep.2012.12.006. Epub 2013 Jan 5. PMID: 23295002.
 25. Al-Balbeesi A, AlMukhadeb E, BinMayouf M, AlNasser S, Aldossari A, Alfaiz F, Alyamani A, Alammari A, Almuhaideb Q. Dermatology Patients' Knowledge of Sunscreen Guidelines at a University Hospital in Saudi Arabia. *Clin Cosmet Investig Dermatol.* 2022 Dec 29; 15: 2915–2923. doi: 10.2147/CCID.S393455. PMID: 36601461; PMCID: PMC9807272.
 26. AlJasser MI, Aljumah A, Alzaydi M, Alassaf A, AlassafiS, Alassafi MT, Almedlej M, Masuadi E. Sunscreen Use among a Population of Saudi University Students. *Dermatol Res Pract.* 2020 Mar 16; 2020: 4732721. doi: 10.1155/2020/4732721. PMID: 32256562; PMCID: PMC7102484.

المعرفة والمواقف والممارسات تجاه استخدام واقي الشمس بين مرضى الأمراض الجلدية في مستشفى جامعي ثالث في عمان ، الأردن: دراسة مقطعية

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المخلص

الخلفية والأهداف: يعتبر سرطان الجلد مصدر قلق كبير للصحة العامة على مستوى العالم . أدى موقع الأردن وتعرضه العالي للأشعة فوق البنفسجية إلى زيادة معدل الإصابة بسرطان الجلد . هدفت هذه الدراسة إلى التحقيق في معرفة واتجاهات وممارسات المرضى تجاه استخدام واقي الشمس في عيادة الأمراض الجلدية في الأردن، وتحديد العوامل الديموغرافية المرتبطة بالاستخدام المنتظم للواقي من الشمس.

المنهجية: أجريت دراسة مقطعية قائمة على الملاحظة في عيادة الأمراض الجلدية بمستشفى من الدرجة الثالثة في عمان، الأردن من 2 فبراير 2023 إلى 6 مارس 2023. وشملت الدراسة 397 مشاركاً تم تجنيدهم من منطقة انتظار العيادة . تم استخدام استبيان مسح مصدق لجمع البيانات عن التركيبة السكانية، وتاريخ سرطان الجلد السابق، والحساسية الواقية من الشمس، والمعرفة، والمواقف، والممارسات المتعلقة باستخدام واقي الشمس . تم تحليل البيانات باستخدام الإصدار 26 من SPSS، وتم إنشاء دلالة إحصائية عند قيمة $p < 0.05$.

النتائج: غالبية المشاركين كانوا من الإناث (67.0%) (وتتراوح أعمارهم بين 18-25 سنة 53.7%). (أبلغ 24.9% فقط من المشاركين عن استخدام واقي الشمس بانتظام، بينما أبلغ 34.0% عن عدم استخدامه مطلقاً . كان المشاركون من ذوي مستويات التعليم العالي والدخل أكثر عرضة لاستخدام واقي الشمس بانتظام . كانت المصادر الرئيسية لتوصيات الواقي من الشمس هي العائلة والأصدقاء (48.1%)، يليهم أطباء الجلد (32.7%). (كان النسيان هو السبب الأكثر شيوعاً لعدم استخدام واقي الشمس (40.1%).

الاستنتاجات: كشفت الدراسة أن المعرفة والممارسات المتعلقة باستخدام الواقي من الشمس بين مرضى الجلد الأردنيين غير كافية، وأن هناك حاجة لزيادة تثقيف المريض فيما يتعلق بأهمية استخدام الواقي من الشمس.

الكلمات الدالة: واقية من الشمس ، المعرفة ، المواقف.

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